

ABSTRACT OF THE DISCLOSURE

An exchange coupling film including an antiferromagnetic layer and a ferromagnetic layer in contact with the antiferromagnetic layer so as to generate an exchange coupling magnetic field is provided. A PtMn alloy is used as the material of the antiferromagnetic layer. Crystal planes of the antiferromagnetic layer and the ferromagnetic layer preferentially aligned parallel to the interface are crystallographically identical and crystallographically identical axes lying in these crystal planes are oriented, at least partly, in different directions between the antiferromagnetic layer and the ferromagnetic layer. Thus, a proper order transformation occurs in the antiferromagnetic layer as a result of heat treatment and an increased exchange coupling magnetic field can be obtained.